

CLAIMS

1. A beverage extraction assembly for application to beverage extraction machines for extracting a beverage from a particulate substance contained in a cartridge, characterized in that it comprises:

5       a support connectable to a water outlet of a beverage extraction machine;

          a cartridge holder removably mounted on said support for holding a cartridge containing a particulate substance, said cartridge comprising at least a first cartridge port protruding outwardly from its upper surface for  
10   receiving water under pressure;

          said support comprising a water inlet port connectable to said water outlet of the beverage extraction machine, for delivering said water to said first cartridge port,

          said cartridge holder comprising a bottom aperture for providing an  
15   escape for the extracted beverage;

          said water inlet port of said support comprising means for providing a radial fluid-tight seal between said water inlet port and said first cartridge port.

2. The extraction assembly of claim 1, characterized in that it  
20   comprises an injection nozzle assembly that is integral or connected to with said water inlet port and that faces the cartridge holder, said injection nozzle assembly being engageable with said first cartridge port so as to inject said water under pressure into said cartridge.

3. The extraction assembly of claim 1, characterized in that said  
25   nozzle assembly comprises:

          a hollow nozzle body, having an internal through cavity for allowing passage of water therethrough from a first open end of said nozzle body, which is connected with said water inlet port, to a second open end of said nozzle body, which receives said first cartridge port therein;

30       a needle integral with said nozzle body, for providing an access to the

inside of said first cartridge port.

4. The extraction assembly of claim 3, characterized in that said needle is a separate piece secured into an annular projection formed on said internal through cavity.

5 5. The extraction assembly of claim 3, characterized in that said needle comprises an axial cavity communicating with the internal through cavity of said nozzle body, said needle further comprising radial through openings communicating with said axial cavity for supplying water in a substantially radial direction.

10 6. The extraction assembly of any one of claims 3 to 5, characterized in that said nozzle body comprises an annular recess at said second open end, so as to house said means for providing a radial fluid-tight seal.

7. The extraction assembly of any one of the preceding claims, characterized in that said means for providing a radial fluid-tight seal  
15 comprise an O-ring.

8. The extraction assembly of any one of the preceding claims, characterized in that said means for providing a radial fluid-tight seal comprise a rubber gasket having a central pierceable portion and a peripheral thicker portion, said rubber gasket being plugging said first cartridge port  
20 before said needle pierces it.

9. The extraction assembly of any one of the preceding claims, characterized in that it comprises a cartridge ejector mounted on said support, for keeping said cartridge pressed inside said cartridge holder until said cartridge holder is at least partially removed from said support.

25 10. The extraction assembly of claim 9, characterized in that said cartridge ejector is substantially toroidal and is mounted around said nozzle assembly, said cartridge ejector comprising spring means abutting its upper surface and a lower surface of said support.

11. The extraction assembly of any one of the preceding claims,  
30 characterized in that said support comprises a connector member comprising

said water inlet port and comprises a bayonet holder on which said cartridge holder is securable according to a bayonet fitting.

12. The extraction assembly of any one of the preceding claims, characterized in that said cartridge holder is substantially cup-shaped so as to  
5 house said cartridge, the inner surface of said cartridge holder being shaped substantially complementary to the outer shape of said cartridge.

13. The extraction assembly of any one of the preceding claims, characterized in that said bottom aperture of said cartridge holder is large enough to allow a beverage outlet spout integrated in said cartridge to pass  
10 through said aperture, in order to prevent said cartridge holder from being contaminated by the extracted beverage output from said cartridge and, accordingly, so that the same beverage extraction machine and the same extraction assembly can be consecutively used over time with cartridges containing different particulate substances.

15 14. The extraction assembly of any one of the preceding claims, characterized in that said nozzle assembly comprises:

a hollow nozzle body, having an internal through cavity for allowing passage of water therethrough from a first open end of said nozzle body, that is connected with said water inlet port, to a second open end of said nozzle  
20 body, that is engageable with said first cartridge port, said hollow nozzle body comprising a tip end at said second open end which is insertable into said first cartridge port, so as to deliver said water under pressure inside said cartridge without using an injection needle.

15 15. The extraction assembly of claim 14, characterized in that said tip end comprises said means for providing a radial fluid-tight seal which are mounted on its external surface.

16. The extraction assembly of claim 14 or 15 characterized in that said means for providing a radial fluid-tight seal comprise an O-ring installed into an annular recess formed on the external surface of said tip end  
30 of said nozzle assembly.

17. The extraction assembly of claim 1, characterized in that said cartridge comprises

5 a main body comprising a cup portion and a lid portion, the cup portion comprising a base, a sidewall and a rim opposed to said base, the lid portion being fixedly attached to said rim of the cup portion so as to define an internal volume of said cartridge,

the internal volume of said cartridge housing the particulate substance comprised within filtering means for retaining said particulate substance and for percolating fluid substances therethrough,

10 said lid portion comprising said cartridge port defining an inlet passage for said water,

a tappet being arranged inside a conical hollow volume defined between said filtering means and said base, so as to pierce said base when a pressure is applied to said base towards said internal volume, thus opening a  
15 normally closed cup port and forming a spout,

wherein said cartridge holder is internally shaped so as to apply said pressure to the base of said cartridge towards said internal volume when the cartridge holder is secured to said support.